

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE

ANNUAL REPORT OF RESEARCH FACILITY
(TYPE OR PRINT)

1. REGISTRATION NO. 81-R-0002	CUSTOMER NO. 1069	FORM APPROVED OMB NO. 0579-0036
2. HEADQUARTERS RESEARCH FACILITY (Name and Address, as registered with USDA, include Zip Code) MONTANA STATE UNIVERSITY ANIMAL RESOURCE CENTER P. O. BOX 173640 BOZEMAN, MT 59717 (406) 994-6803		

3. REPORTING FACILITY (List all locations where animals were housed or used in actual research, testing, teaching, or experimentation, or held for these purposes. Attach additional sheets if necessary.)

FACILITY LOCATIONS(sites)

See Attached Listing

REPORT OF ANIMALS USED BY OR UNDER CONTROL OF RESEARCH FACILITY (Attach additional sheets if necessary or use APHIS FORM 7023A)

A. Animals Covered By The Animal Welfare Regulations	B. Number of animals being bred, conditioned, or held for use in teaching, testing, experiments, research, or surgery but not yet used for such purposes.	C. Number of animals upon which teaching, research, experiments, or tests were conducted involving no pain, distress, or use of pain- relieving drugs.	D. Number of animals upon which experiments, teaching, research, surgery, or tests were conducted involving accompanying pain or distress to the animals and for which appropriate anesthetic, analgesic, or tranquilizing drugs were used.	E. Number of animals upon which teaching, experiments, research, surgery or tests were conducted involving accompanying pain or distress to the animals and for which the use of appropriate anesthetic, analgesic, or tranquilizing drugs would have adversely affected the procedures, results, or interpretation of the teaching, research, experiments, surgery, or tests. (An explanation of the procedures producing pain or distress in these animals and the reasons such drugs were not used must be attached to this report)	F. TOTAL NO. OF ANIMALS (Cols. C + D + E)
4. Dogs					0
5. Cats		4			4
6. Guinea Pigs					0
7. Hamsters		12	577		589
8. Rabbits		38			38
9. Non-Human Primates			4		4
10. Sheep	1		40		40
11. Pigs					0
12. Other Farm Animals					
Cattle		86	9	31	126
13. Other Animals					
Gerbils			47		47
Bison		4			4

ASSURANCE STATEMENTS

- 1) Professionally acceptable standards governing the care, treatment, and use of animals, including appropriate use of anesthetic, analgesic, and tranquilizing drugs, prior to, during, and following actual research, teaching, testing, surgery, or experimentation were followed by this research facility.
- 2) Each principal investigator has considered alternatives to painful procedures.
- 3) This facility is adhering to the standards and regulations under the Act, and it has required that exceptions to the standards and regulations be specified and explained by the principal investigator and approved by the Institutional Animal Care and Use Committee (IACUC). A summary of all the exceptions is attached to this annual report. In addition to identifying the IACUC-approved exceptions, this summary includes a brief explanation of the exceptions, as well as the species and number of animals affected.
- 4) The attending veterinarian for this research facility has appropriate authority to ensure the provision of adequate veterinary care and to oversee the adequacy of other aspects of animal care and use.

CERTIFICATION BY HEADQUARTERS RESEARCH FACILITY OFFICIAL
(Chief Executive Officer or Legally Responsible Institutional official)

I certify that the above is true, correct, and complete (7 U.S.C. Section 2143)

OFFICIAL

NAME & TITLE OF CEO OR INSTITUTIONAL OFFICIAL

SIGNED

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Column E Explanation

1. Registration Number: 81-R-0002; Customer #1069
2. Number of animals used in this study: 31 in category E
3. Species: Cattle (calves)
4. Explain the procedure producing pain and/or distress:

The overall goal of this project is to identify a new class of immunologic agents that enhance host resistance to mucosal pathogens. Cattle are used because in comparison to other animal models, they have the largest numbers of the cell type of interest. To test this immune response, cattle are challenged with an infectious agent. *Salmonella typhimurium* is used for the challenge because oral infection in calves leads to symptomatic salmonellosis.

Salmonella infection can produce pain and/or distress in cattle. The volume of inoculum is carefully titrated, resulting in a very mild enteric disease in most animals that consists of fever, anorexia, and sporadic diarrhea. Clinical signs normally begin 24-48 hours post-inoculation and are transient, lasting 48-72 hours. Although analgesics are not administered, calves are monitored closely by the animal care staff and palliative therapy, such as intravenous fluids are administered if needed. At the conclusion of the experiments, infected calves are treated with antibiotics to prevent secondary infection.

5. Provide scientific justification why pain and/or distress could not be relieved. State methods or means used to determine that pain and/or distress relief would interfere with test results:

The purpose of this work is to monitor the mucosal immune response to infectious agents. Agents that relieve symptoms, such as analgesics, have the potential of altering host defense responses and could mask or alter the effects of the therapeutic adjuvants that are being tested.

A literature search was performed to determine if alternatives exist. There were no alternatives that would allow replacement of animals for these procedures. Prior to performing any procedures in cattle, the investigator makes every attempt to maximize the use of *in vitro* techniques and performs initial studies in animals lower on the phylogenetic scale (mice).

Information in the literature did assist in refining procedures and reducing animal numbers. Through information gathered in the literature, the investigator was able to minimize the dose range of Salmonella used for the challenges, therefore reducing the number of animals needed and decreasing clinical signs produced to the minimum needed to obtain statistically valid results.

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